JUPITER PRIME

Consulting • Training • Advisory

جوبيتر برايم للاستشارات والتدريب

COURSE BROCHURE

Power Plant Heat Rate Improvement and Loss Accounting Training Course

5 – 9 April 2027
Madrid

jupiterprime.uk

info@jupiterprime.uk

Registered in the United Kingdom and Saudi Arabia

Power Plant Heat Rate Improvement and Loss Accounting Training Course

Ref: 3207_121968 **Date:** 5 – 9 April 2027 **Location:** Madrid **Fees:** 6200 GBP

Power Plant Heat Rate Improvement and Loss Accounting is a 1-week training course for performance engineers, efficiency engineers and plant managers in thermal power stations, in which each participant builds a heat rate improvement plan that ranks losses by recoverable fuel cost. Fuel is the largest controllable cost of a thermal station, and lost heat raises emissions too. Jupiter Prime Training runs this Power Plant Heat Rate Improvement course.

Why Power Plant Heat Rate Improvement Matters Now

Three forces shape heat rate work today. Units now cycle to follow renewable output, so part-load and start-up losses weigh more. Emissions reporting rests on measured fuel use. And experienced performance staff are retiring. A station that accounts for losses well spends maintenance money where it returns most fuel; one that does not fixes visible faults while costly deviations hide in averages.

Who Gains Most from Power Plant Heat Rate Improvement

- Engineers who run unit performance tests and deviation reports
- Staff who set operating targets for each shift
- Maintenance planners who decide which outage work restores efficiency
- Plant managers who approve efficiency spending and answer for fuel budgets
- Fuel specialists who reconcile fuel receipts with generation

A station that sends its performance engineer, an operations lead and a maintenance planner together gains most.

Power Plant Heat Rate Improvement Capabilities

These outcomes tie each loss to fuel cost.

- Calculate gross and net unit heat rate from fuel flow, calorific value and electrical output — monthly efficiency reporting
- Build a loss account that splits the gap to design across boiler, turbine, condenser and auxiliaries — outage scope decisions
- Separate controllable losses from those fixed by ambient conditions and load — operating targets for shift crews
- Specify performance test conditions, instrument accuracy and correction curves — acceptance and baseline testing
- Weigh improvement projects by recoverable fuel cost, outage time and capital — plant manager approval
- Communicate heat rate deviations in terms that operators and finance staff can act on — fuel budget reviews

Key Power Plant Heat Rate Improvement Terms

- Net Unit Heat Rate — fuel heat input divided by electricity sent out after auxiliary consumption.
- Controllable Loss — a deviation that staff can reduce, such as excess air or condenser fouling.
- Boiler Efficiency by Losses — efficiency found by subtracting each measured boiler loss from one hundred percent.
- Turbine Section Efficiency — the ratio of actual to ideal enthalpy drop across a turbine section.
- Condenser Back Pressure Deviation — the gap between measured and expected exhaust pressure.
- Correction Curve — a curve that adjusts a test result to reference ambient and load conditions.

Power Plant Heat Rate Improvement Day by Day

Day 1: Fuel, Output and the Heat Balance

- Gross and Net Heat Rate Calculation — Basis for Monthly Efficiency Reporting
- Calorific Value and Fuel Flow Measurement — Confidence in the Fuel Input Figure
- Steam and Combined Cycle Heat Balance — Where Fuel Energy Leaves Each Cycle
- Design, Expected and Actual Heat Rate — Setting a Fair Unit Baseline
- Part-Load and Cycling Effects on Efficiency — Dispatch Choices for Flexible Units

Day 2: Boiler and Heat Recovery Losses

- Dry Flue Gas and Excess Air Losses — Combustion Air Targets for Operators
- Unburnt Carbon and Moisture Losses — Fuel Quality and Mill Settings
- Air Heater Leakage and Exit Gas Temperature — Cleaning and Seal Repair Timing
- Heat Recovery Steam Generator Approach and Pinch — Gas Turbine Exhaust Recovery
- Sootblowing and Attemperation Spray Effects — Steam Temperature Control Choices

Day 3: Turbine, Condenser and Auxiliary Losses

- Turbine Section Efficiency by Enthalpy Drop — Locating Internal Wear and Leakage
- Condenser Back Pressure and Cleanliness Factor — Tube Cleaning and Cooling Water Flow
- Feedwater Heater Terminal Difference — Heater Isolation and Drain Problems
- Auxiliary Power Consumption Audit — Fan, Pump and Mill Running Decisions
- Gas Turbine Compressor Fouling and Inlet Losses — Washing Intervals and Filter Changes

Day 4: Testing, Monitoring and Controllable Losses

- Performance Test Planning and Instrument Uncertainty — Credible Before and After Results
- Correction Curves for Ambient and Load — Comparing Tests on Equal Terms
- Online Deviation Monitoring and Loss Dashboards — Shift Targets and Alarms
- Controllable Versus Uncontrollable Loss Split — Accountability Between Operations and Maintenance
- Recoverable Fuel Cost per Loss — Turning Deviations into Money Terms

Day 5: Practising the Heat Rate Improvement Plan

- Loss Account for a Sample Coal and Gas Fired Unit — Applying Boiler and Turbine Methods
- Outage Scope Selection from Test Findings — Applying Condenser and Heater Results
- Project Screening by Payback and Outage Time — Applying Recoverable Fuel Cost
- Presenting Loss Rankings to Plant Management — Approval of Efficiency Spending
- Heat Rate Improvement Plan Ranked by Recoverable Fuel Cost — Completed Station Efficiency Roadmap

Applying Power Plant Heat Rate Improvement After the Course

- Lead a loss account for one unit across boiler, turbine, condenser and auxiliaries.
- Set up a weekly controllable loss report for shift crews.

Power Plant Heat Rate Improvement Questions FAQ

What is Power Plant Heat Rate Improvement and why does it matter now?

Power Plant Heat Rate Improvement is the work of measuring how much fuel a unit burns per unit of electricity and reducing that figure. It matters now because units cycle more and fuel is the largest controllable cost.

Which roles gain most from Power Plant Heat Rate Improvement?

Performance and efficiency engineers gain most, followed by operations leads, maintenance planners and plant managers. Sending testing, operations and maintenance staff together helps most.

How does Power Plant Heat Rate Improvement differ from shift heat rate monitoring?

It goes deeper. A monitoring course teaches crews to follow live deviations; this course teaches you to calculate the full loss account, run performance tests and rank improvement projects by recoverable fuel cost.

What do you bring back from Power Plant Heat Rate Improvement?

You bring back a ranked list of losses for a unit, with recoverable fuel cost attached to each. You also bring back test planning methods and correction curves.

Power Plant Heat Rate Improvement: The Way Forward

The heat rate improvement plan ranks every loss by recoverable fuel cost. Its first use is choosing the scope of the next outage, and it serves performance engineers, maintenance planners and the plant manager who signs off spending. After the first outage, retest the unit and revisit the ranking, since repairs change which loss costs most.